

### **Abstract of the Disclosure**

A method for depositing metal on a semiconductor device having a substrate, an exposed first surface, and an exposed second surface is provided. Metal ions are deposited on the exposed first surface and on the exposed second layer by applying a  
5 first voltage between the substrate and an anode in the presence of an electrolytic bath, and metal ions are removed from the exposed first surface by applying a second voltage between the substrate and the anode in the presence of the electrolytic bath. Other aspects and embodiments are provided herein.

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